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SlimZone Premier

ZONE CONTROL SYSTEM

INSTALLATION AND OPERATION MANUAL

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1. INTRODUCTION

The SlimZone Premier (SZP) is a commercial/residential HVAC (Heating/Ventilation/Air Conditioning) zone control system which allows control of up to nineteen (19) zones with a single HVAC system. Each zone is controlled by its own zone thermostat and motorized damper. The control module monitors the zone thermostats, sets the HVAC system in the appropriate mode of operation, and energizes the number of stages of heating or cooling accordingly.

The basic system consists of the main SlimZone Premier control module (SZP-3) which may control up to three (3) zones. The modular nature of this system allows the expansion of the number of controlled zones by simply adding SlimZone Expander modules (SZEX) which add two (2) zones to the system per module. Up to eight (8) expander modules may be connected to the control module, allowing a total of nineteen (19) zones.

Only DSL-520P communicating zone thermostats may be used with the SlimZone Premier Control module. Each zone to be controlled requires a zone thermostat.

The user interface to the SlimZone Premier consists of a four (4) button keypad and a four (4) line by twenty (20) character LCD display, through which all system information may be viewed or modified.

1.1 IMPORTANT NOTE

IT IS IMPORTANT THAT YOU READ AND UNDERSTAND THIS MANUAL SUPPLIED WITH THE SLIMZONE PREMIER, AS WELL AS THE HVAC EQUIPMENT MANUFACTURER'S INFORMATION, BEFORE BEGINNING INSTALLATION OF THE SYSTEM.

1.2 FEATURES

- Ultra slim styled cabinet (8-7/8" (22.5cm)W x 9-1/2" (24cm)H x 1-3/4" (4.5cm)D)
- Two (2) modes of operation: timesharing or differential
- Four (4) lines by twenty (20) characters backlit LCD display
- User friendly interface which allows access to features such as:
  - panel setup
  - system programming (temperatures, schedules, 2 or 4 events per day)
  - 12 or 24 hour clock
  - temperature display in °F or °C
  - equipment test
- LED (light emitting diode) status indicators on all system functions
- Solid state control module with current limited relay outputs
- Controls heat pumps, cooling units and gas, oil or electric furnace units
- Number of controlled zones expandable to nineteen (19) in increments of two (2) zones by ordering the SlimZone Expander module (SZEX)
- Controls up to four (4) stages of heating and three (3) stages of cooling in heat/cool mode
- Controls up to three (3) stages of heating and three (3) stages of cooling in heat pump mode
- Two (2) speed fan output
- Forty-five (45) second fan purge into last zone(s) calling
- Constant or automatic fan during occupied cycle
- Two (2) or three (3) wire damper capability
- Perimeter heat control from zone thermostats
- High/Low limit downstaging
- High/Low balance control

- Minimum on/off times (short cycle protection)
- Occupied/unoccupied cycle capability
- Manual or automatic changeover
- Smoke detector input
- All low voltage wiring
- No batteries required

1.3 SAFETY INSTRUCTIONS

- Sudden equipment operation may cause serious injury from moving parts. Leave power disconnected until installation is complete.
- Sharp edges may cause damage to wires. Use care during the installation.
- Installation must be done in accordance with all applicable codes and regulations.
- Installer should touch a grounded metal object before handling any of the modules in the SlimZone Premier control system, to avoid potential loss of internal computer programs due to static discharge.

2. APPLICATION AND DESIGN CONSIDERATIONS

A. Only DSL-520P communicating zone thermostats may be used.

B. Air conditioning control systems require that the air handling equipment be properly sized for the application; otherwise, satisfactory temperature control may not be realized.

C. It is recommended that system installations be limited to thirty (30) tons of equipment capacity. Enerstat dampers are designed to work only with low pressure systems (1.0" WC or less).

D. Oversizing of HVAC equipment is not recommended. In most cases it is better to slightly undersize than oversize.

E. Extra consideration should be given in applications that require large amounts of cooling in cold weather, such as buildings with a center or core area.

F. At least two (2) stages of cooling and/or compressor unloading are highly desirable.

G. Hot gas bypass should be considered on some commercial systems.

H. If the HVAC unit is supplied with an economizer, it is recommended that the economizer package be equipped with a relief air damper.

I. The pressure drop across typical dampers is negligible and normally is not a factor when sizing or calculating branch duct CFM.

J. Balancing dampers should be installed ahead of all motorized zone dampers.

K. Zone dampers should be installed ten (10) feet back from discharge grille when possible.

L. Flex or lined duct is recommended on the last five (5) feet.

M. A bypass damper must be installed on all systems of three (3) zones or more.

N. The thermostats and motorized dampers may be located up to 300 feet (90m) from the control module, using nonshielded 3 (dampers) and 4 (thermostat) conductor 18 - 24AWG copper wires.

O. A maximum load of 2.5 Amps may be switched by the output terminals, which complies with Class 2 wiring code.

P. System wires should be tagged to match the module terminal designations.

Q. The addition of equipment heating and cooling limits, as provided by the SlimZone Environmental module (SZEM), is strongly recommended and will greatly help in preventing temperature swings as well as constant heating/cooling changeover.

R. All zones served by a SlimZone control module should have the same basic load characteristics (i.e., do not put 4 zones on an east exposure, and the 5th zone on a southwest exposure).

S. All references to typical dampers refer to Enerstat model dampers.

T. Zones 14-19 adhere to the same schedule and act as a single call for equipment. Although they are separate physical zones they act as a single zone when communicating with the SZP Control module. It is recommended that when considering the layout of your zone system, zones 14-19 should be assigned to areas of low priority.

3. COMPONENT REQUIREMENTS

3.1 BASIC SYSTEM

The basic system consists of the main SlimZone Premier Control module (SZP-3: 3 zone module) and its supporting components.

ITEM	QUANTITY	CONSIDERATIONS
SZP-3 control module	one (1)	contains three (3) zones
DSL-520P zone thermostat	one (1) per zone	use standard nonshielded 4 conductor 18-24AWG copper wire
Motorized zone dampers	one (1) per zone (minimum)	use standard nonshielded 3 conductor 18AWG copper wire
24VAC transformers	one (1) for main module	75VA
	zone dampers powered by separate transformer(s)	refer to section 3.4 for sizing

Table 3.1: SlimZone Premier Basic Components

3.2 EXPANDER MODULE

Each SlimZone Expander module (SZEX) consists of two (2) additional zones. For each expander module added, the following items are required:

ITEM	QUANTITY	CONSIDERATIONS
SZEX expander module	one (1)	contains two (2) zones
DSL-520P zone thermostat	one (1) per zone	use standard nonshielded 4 conductor 18-24AWG copper wire
Motorized zone dampers	one (1) per zone (minimum)	use standard nonshielded 3 conductor 18AWG copper wire
24VAC transformers	SZEX powered by SZP	N/A
	zone dampers powered by separate transformer(s)	refer to section 3.4 for sizing

Table 3.2: SlimZone Expander Module Components

Note: Expander module itself does not require a transformer as it is powered by the control module.

3.3 ENVIRONMENTAL MODULE

ITEM	QUANTITY	CONSIDERATIONS
SZEM environmental module	one (1)	contains two (2) remote temperature probes, and PVC tubing for static pressure
		use standard nonshielded 2 conductor 18-24 AWG copper wire to connect to SZP
Motorized bypass damper	one (1) - may require two (2) in larger systems	use standard nonshielded 3 conductor 18AWG copper wire
24VAC transformer	one (1)	20VA (300mA)

Table 3.3: SlimZone Environmental Module Components

3.4 SIZING TRANSFORMERS

To avoid unsatisfactory operation DO NOT power the SZP control module with the HVAC equipment transformer. A dedicated field supplied 24VAC, 75VA transformer is recommended to power the control module, which in turn may have up to nineteen (19) zones connected to it. Zone dampers require separate transformers.

Zone dampers may be powered by individual zone transformers or by a single transformer. A single transformer used to power more than one damper must have a sufficient power rating (VA) to energize all dampers. To determine the total power requirements, add each damper's VA rating. Typical dampers require a maximum of 12VA each. This total must not exceed the VA rating of the transformer.

3.5 SIZING DAMPERS

It is important that dampers be sized according to system ductwork specification (CFM) and balanced in compliance to SMACNA, ACCA and ASHRAE guidelines in order for the control system to properly control comfort in each zone. Typical dampers are nonmodulating and are available in two (2) wire (powered closed, spring return to open), or three (3) wire (powered closed, powered open) configuration. The pressure drop across Enerstat dampers is negligible and normally not a factor when sizing or calculating branch duct CFM. Typical dampers are designed to work with low pressure systems (1.0" WC) or less.

3.6 TYPICAL SYSTEM DIAGRAM

Figure 3.1 illustrates a typical SlimZone Premier installation, including the optional environmental module (SZEM) and its accessories.

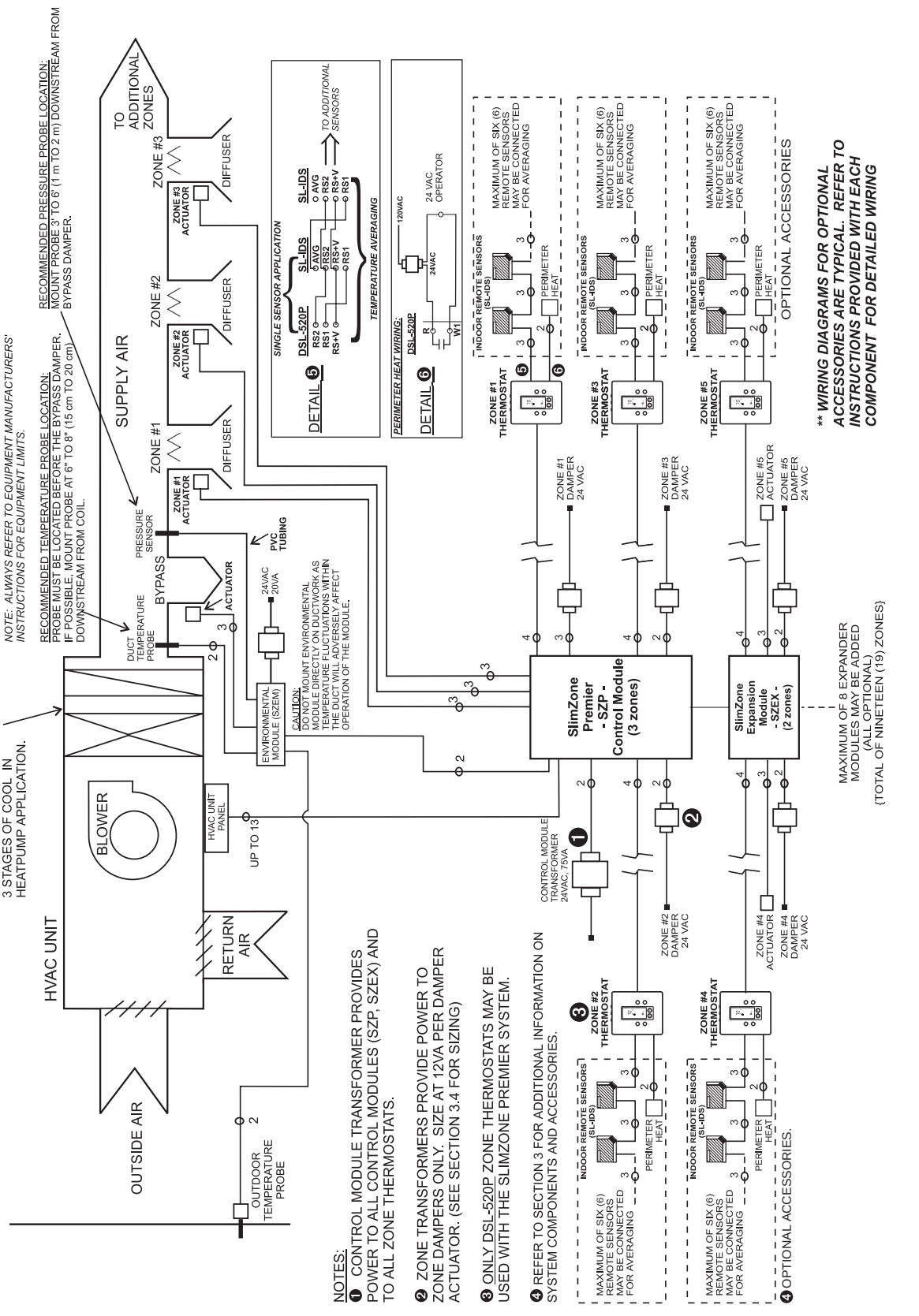

- UP TO 4 STAGES OF HEAT & 3 STAGES OF COOL IN HEAT/COOL APPLICATION.
- UP TO 3 STAGES OF HEAT AND 3 STAGES OF COOL IN HEATPUMP APPLICATION.
RECOMMENDED SETTINGS FOR HIGH & LOW LIMITS:
SET HEATING HIGH LIMIT AT 10°F (5°C) LOWER THAN EQUIPMENT HIGH LIMIT.
SET COOLING LOW LIMIT AT 55°F (13°C).
NOTE: ALWAYS REFER TO EQUIPMENT MANUFACTURERS' INSTRUCTIONS FOR EQUIPMENT LIMITS.
RECOMMENDED TEMPERATURE PROBE LOCATION:
PROBE MUST BE LOCATED BEFORE THE BYPASS DAMPER. IF POSSIBLE, MOUNT PROBE AT 6" TO 8" (15 cm TO 20 cm) DOWNSTREAM FROM COIL.
RECOMMENDED PRESSURE PROBE LOCATION:
MOUNT PROBE 3' TO 6' (1 m TO 2 m) DOWNSTREAM FROM BYPASS DAMPER.
HVAC UNIT
OUTSIDE AIR
RETURN AIR
BLOWER
HVAC UNIT PANEL
UP TO 13
OUTDOOR TEMPERATURE PROBE
DUCT TEMPERATURE PROBE
PRESSURE SENSOR
BYPASS
ACTUATOR
PVC TUBING
24VAC 20VA
ENVIRONMENTAL MODULE (SZEM)
CAUTION:
DO NOT MOUNT ENVIRONMENTAL MODULE DIRECTLY ON DUCTWORK AS TEMPERATURE FLUCTUATIONS WITHIN THE DUCT WILL ADVERSELY AFFECT OPERATION OF THE MODULE.
SUPPLY AIR
TO ADDITIONAL ZONES
ZONE #1
ZONE #2
ZONE #3
ZONE #1 ACTUATOR
ZONE #2 ACTUATOR
ZONE #3 ACTUATOR
DIFFUSER
SINGLE SENSOR APPLICATION
DSL-520P
SL-IDS
AVG
RS2
RS1
RS+V
DETAIL 5
TO ADDITIONAL SENSORS
TEMPERATURE AVERAGING
PERIMETER HEAT WIRING:
120VAC
24VAC
24 VAC OPERATOR
W1
DETAIL 6
SlimZone Premier - SZP - Control Module (3 zones)
SlimZone Expansion Module - SZEX - (2 zones)
CONTROL MODULE TRANSFORMER 24VAC, 75VA
ZONE #1 THERMOSTAT
ZONE #2 THERMOSTAT
ZONE #3 THERMOSTAT
ZONE #4 THERMOSTAT
ZONE #5 THERMOSTAT
INDOOR REMOTE SENSORS (SL-IDS)
MAXIMUM OF SIX (6) REMOTE SENSORS MAY BE CONNECTED FOR AVERAGING
PERIMETER HEAT
ZONE #1 DAMPER 24 VAC
ZONE #2 DAMPER 24 VAC
ZONE #3 DAMPER 24 VAC
ZONE #4 DAMPER 24 VAC
ZONE #4 ACTUATOR
ZONE #5 ACTUATOR
ZONE #5 DAMPER 24 VAC
OPTIONAL ACCESSORIES
MAXIMUM OF 8 EXPANDER MODULES MAY BE ADDED (ALL OPTIONAL) {TOTAL OF NINETEEN (19) ZONES}
** WIRING DIAGRAMS FOR OPTIONAL ACCESSORIES ARE TYPICAL. REFER TO INSTRUCTIONS PROVIDED WITH EACH COMPONENT FOR DETAILED WIRING
NOTES:
1 CONTROL MODULE TRANSFORMER PROVIDES POWER TO ALL CONTROL MODULES (SZP, SZEX) AND TO ALL ZONE THERMOSTATS.
2 ZONE TRANSFORMERS PROVIDE POWER TO ZONE DAMPERS ONLY. SIZE AT 12VA PER DAMPER ACTUATOR. (SEE SECTION 3.4 FOR SIZING)
3 ONLY DSL-520P ZONE THERMOSTATS MAY BE USED WITH THE SLIMZONE PREMIER SYSTEM.
4 REFER TO SECTION 3 FOR ADDITIONAL INFORMATION ON SYSTEM COMPONENTS AND ACCESSORIES.
4 OPTIONAL ACCESSORIES.

Figure 3.1: Typical System Diagram

4. SYSTEM INSTALLATION

4.1 SLIMZONE PREMIER CONTROL MODULE (SZP)

4.1.1 REMOVAL AND INSTALLATION OF THE DOOR

Installer should touch a grounded metal object before handling the control panel to avoid potential loss of programming due to static discharge.

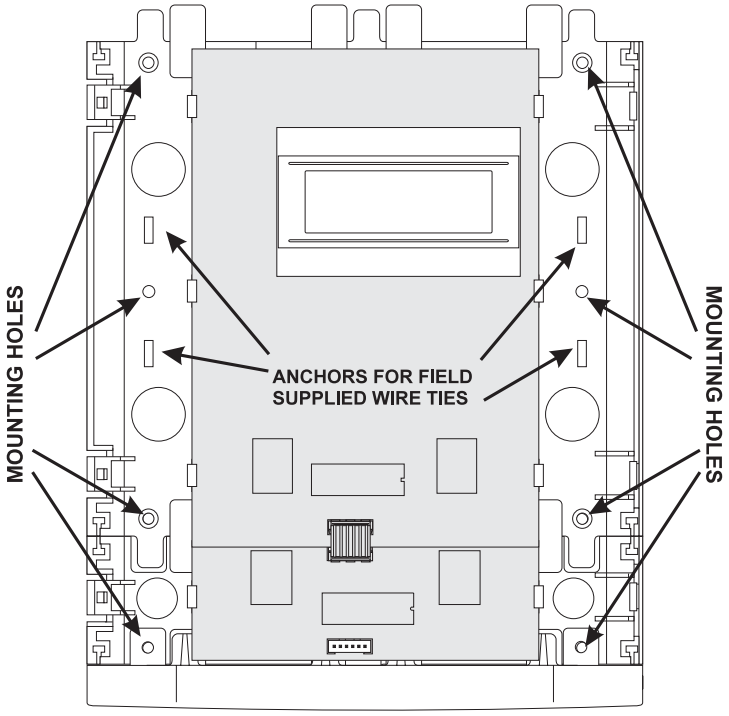
NOTE:
The door is hinged on the left side.

Open the door by gently pulling on the bottom right corner, applying finger pressure only. The door may be removed once opened by applying a slight backward pressure. Replace the door by hooking around the tabs on the left side of the backplate and snapping back into place.

4.1.2 INSTALLATION OF THE BACKPLATE

The control module can be mounted on any interior surface. Use the mounting holes on the backplate of the main unit and the two (2) mounting holes on the expander modules (if so equipped) to secure using the supplied #8 screws (***Figure 4.1***). Mount the control module in a location that provides easy access for service. Do not mount the control module on any part of the HVAC equipment or where moisture may be present. There are several round holes and knock-outs for through-the-wall or surface wiring.

CAUTION: Use proper care when removing upper or lower end cap knock-outs. Apply a sharp rap with the butt end of a screwdriver to remove. Do not use sharp instruments to remove the knock-outs as internal damage may occur.



SZP-3 SHOWN WITH ONE
EXPANDER MODULE (SZEX)

Figure 4.1: Mounting Holes

4.2 THERMOSTAT INSTALLATION: DSL-520P

LOCATION

The most important consideration in installing your DSL-520P Communicating Zone thermostat is where to locate the unit. The location can radically affect the operation of the thermostat. To ensure proper operation, the thermostat should be mounted on an inside wall in a frequently occupied area of the zone. In addition, its position must be at least 18 inches (46cm) from any outside wall, and approximately 5 feet (1.5m) above the floor in a location with freely circulating air of an average temperature. The control module has four (4) terminals at each zone terminal strip for connecting the thermostat.

CAUTION: Ensure that the following polarity is respected (refer to ***Figure 4.2***):

DSL-520P.....SZP

1 1
2 2
3 3
4 4

Refer to the manual provided with the DSL-520P thermostat for detailed instructions.

4.3 DAMPERS

Typical dampers are designed to work with low pressure systems (1.0" WC or less). Balancing dampers should be installed ahead of all zone dampers. Zone dampers should be installed 10ft. (3m) back from discharge grille. A flex or lined duct is recommended for the last 5ft. (1.5m). Enerstat dampers are nonmodulating dampers. Two (2) wire dampers are powered closed and spring return open. Three (3) wire dampers are powered closed and powered open. For applications requiring minimum air ventilation, an adjustment screw is available to set the damper to a specified minimum open position. Enerstat dampers are shipped from the factory with the minimum position adjustment screw in the fully closed position; allow for a 3% to 5% leakage with damper closed. The control module has five (5) terminals at each zone terminal strip for damper connections which are as follows (refer to ***Figure 4.2***):

24L: 24VAC transformer, *24N: 24VAC transformer common*
PC: power damper closed *24N: common*
PO: power damper opened

Power to the dampers is provided by the 24L and 24N terminals at each zone terminal strip. Refer to section 3.4 for information on sizing transformers.

High ambient temperatures that may be encountered (in an attic for instance), will have an impact on the current capabilities of the panel and the number of zone dampers that can be connected to the panel. The SZP is powered by a single 75VA transformer. This transformer is used to power the panel and thermostats. The ambient temperature will have an impact on the polyfuse current limiting protection. The maximum number of dampers that can be connected per zone using Enerstat dampers are:

At 25°C (77°F)	At 40°C (104°F)
5 E Series dampers	4 E Series dampers
4 E2 Series dampers	3 E2 Series dampers
5 E3 Series dampers	4 E3 Series dampers

If additional dampers are required you must use a relay to energize these additional dampers from an independent source.

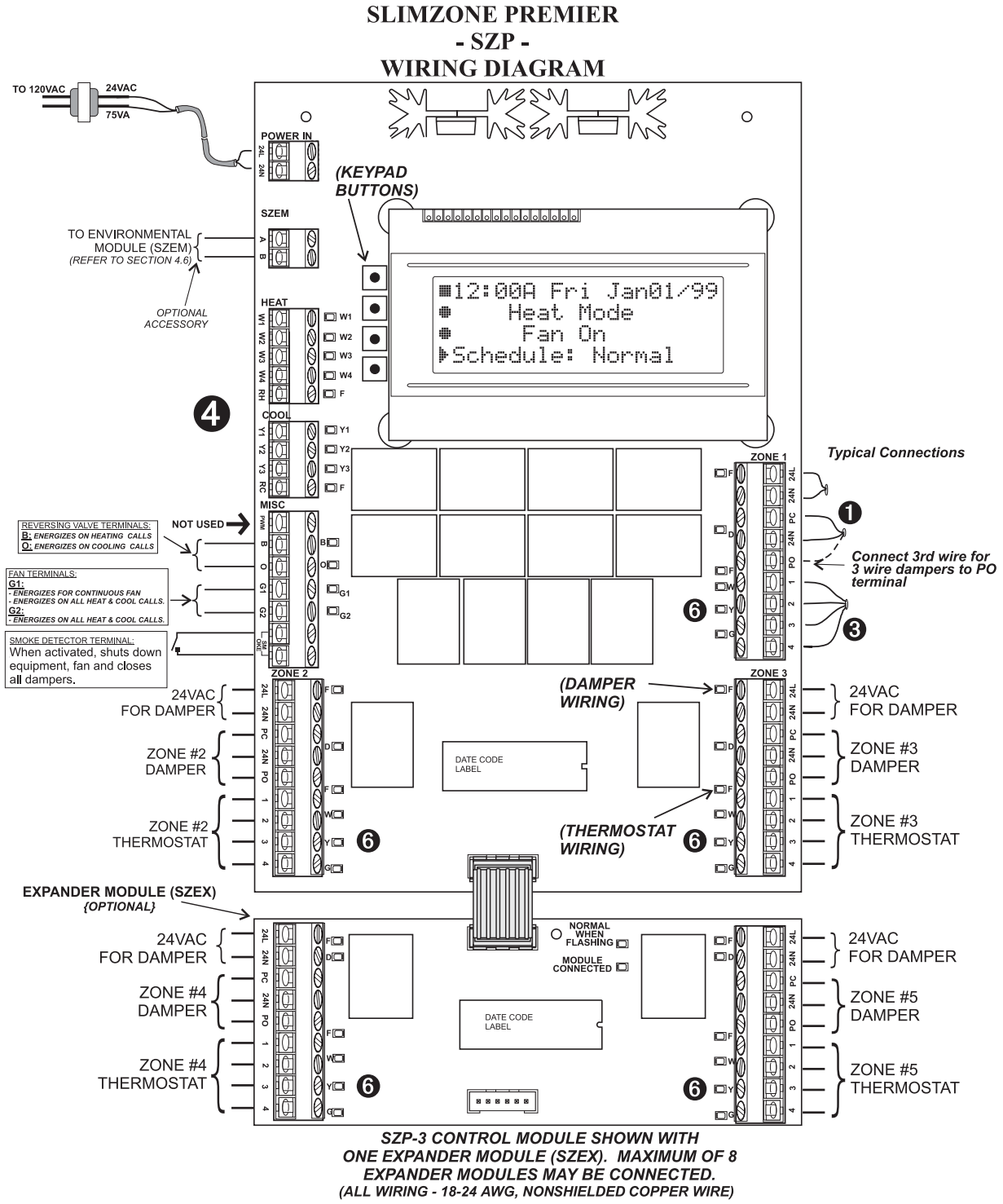
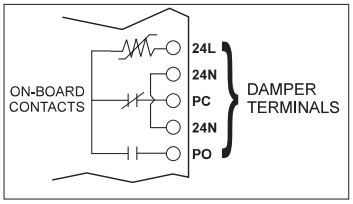
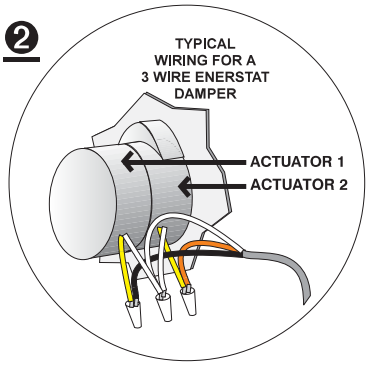


Figure 4.2: SZP Wiring Diagram

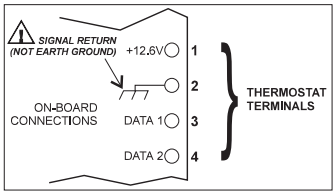
DETAIL ❶

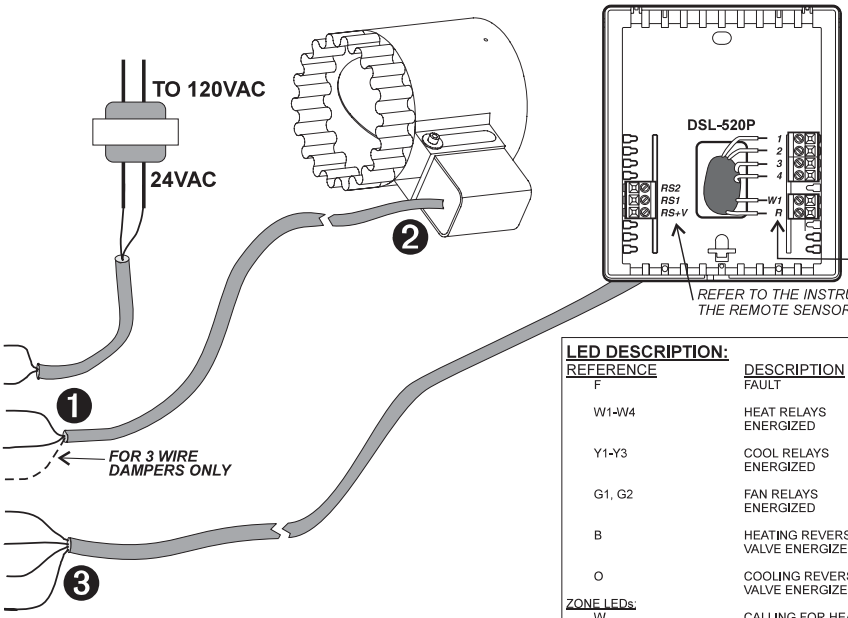


DETAIL ❷



DETAIL ❸





REFER TO THE INSTRUCTIONS PROVIDED WITH THE REMOTE SENSORS FOR WIRING INFORMATION.

⚠ WARNING:

MUST MAINTAIN CORRECT POLARITY BETWEEN THERMOSTATS AND PANEL, OTHERWISE COMMUNICATION WILL NOT BE POSSIBLE AND DAMAGE WILL OCCUR!

1---------->1
2---------->2
3---------->3
4---------->4

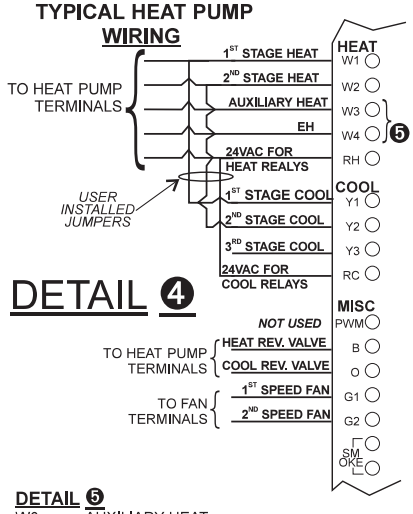
LED DESCRIPTION:

REFERENCE	DESCRIPTION	COLOR
F	FAULT	RED
W1-W4	HEAT RELAYS ENERGIZED	ORANGE
Y1-Y3	COOL RELAYS ENERGIZED	YELLOW
G1, G2	FAN RELAYS ENERGIZED	GREEN
B	HEATING REVERSING VALVE ENERGIZED	ORANGE
O	COOLING REVERSING VALVE ENERGIZED	YELLOW
ZONE LEDs:		
W	CALLING FOR HEAT	ORANGE
Y	CALLING FOR COOL	YELLOW
G	CALLING FOR FAN	GREEN
D	DAMPER OPENED	GREEN

❻ IMPORTANT NOTE:

WHEN LEDs W, Y, & G OF A ZONE ARE ON AT THE SAME TIME, THIS INDICATES NO COMMUNICATION. IF A ZONE THERMOSTAT IS CONNECTED AND THESE ARE ON, CHECK WIRING AND/OR THERMOSTAT.

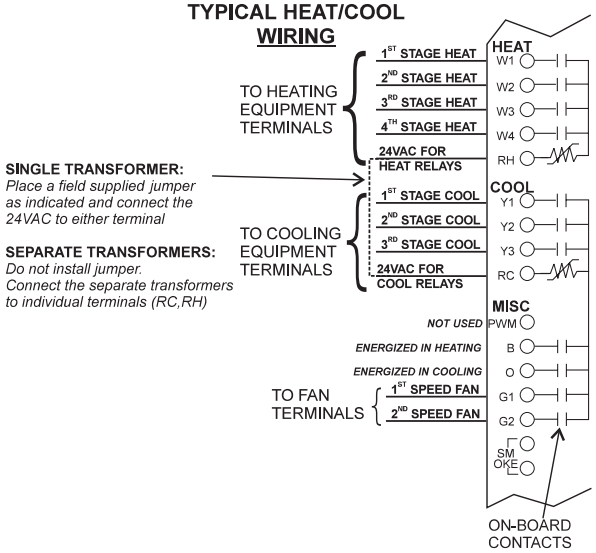
TYPICAL HEAT PUMP WIRING



DETAIL ❹

DETAIL ❺
W3: AUXILIARY HEAT
W4 (EH): CONTINUOUSLY ENERGIZED IN EMERGENCY HEAT.

TYPICAL HEAT/COOL WIRING



4.4 WIRING INFORMATION

Use #18AWG (nonshielded) copper wire for all system wiring; thermostats may use 18-24AWG wire. Thermostats and damper actuators may be located up to 300ft. (90m) from the control module. All system wires should be tagged to identify thermostat, damper and equipment wiring. Refer to ***Figure 4.2*** for control module wiring diagram. It is strongly recommended that a spare or third wire be run between the control module and each zone damper in the event that a three (3) wire damper actuator is used or required in future.

4.5 CURRENT LIMITED OUTPUT TERMINALS

All output circuits on the SlimZone Premier control module incorporate self-resetting current limiting devices which provide protection against excessive current draws caused by circumstances such as wiring shorts on an output. These devices, referred to as polyfuses, generally are activated when the current draw exceeds 2.5Amps. The value and the duration of the excess current is taken into account. The polyfuses will allow excess currents of very short duration (i.e., spikes) in order to prevent circuit interruptions by noisy lines or occasional minor surges. In its current limiting mode, the polyfuses reduce the output current to milliamps.

NOTE: The low leakage current may be sufficient to produce a small voltage reading when measured with a volt meter with a high input impedance.
When the cause of the excess current has been removed and the current draw is returned to a value below 2.5Amps, the polyfuse will reestablish full output current; in some instances this may take up to twenty (20) seconds. Polyfuses eliminate the need to replace blown fuses.

The SZP control module uses red LEDs to indicate when a problem exists with the current being drawn from certain circuits. An LED exists for the following on-board circuits:

- each zone damper circuit
- each zone thermostat circuit (current limited @ 0.1Amp)
- on the COOL terminal strip
- on the HEAT terminal strip

4.6 SLIMZONE ENVIRONMENTAL MODULE (SZEM)

INTRODUCTION

The SlimZone Environmental module (SZEM) is an optional component in the SlimZone Premier system. The module provides the following services:

- Bypass damper control and static pressure sensing
- High/Low temperature limit signaling
- Outdoor temperature measurement

DATA EXCHANGE

All information collected by the SZEM module is communicated to the SlimZone Premier control module (SZP) via a RS485 communication port at 1200 baud. All information received by the SZP control module may be viewed by the user (***Figure 5.2***).

BYPASS SYSTEM

In order to maintain proper air flow and static pressure throughout the HVAC system, a bypass system should be used. In some 2-zone applications, a bypass damper may not be required. This is based on duct sizing where either zone is able to handle approximately 75% of the total system CFM (cubic feet/minute). This will result in only slightly higher air velocity at the discharge grille if only one zone is calling and yet allow for proper CFM across the cooling coil. A single zone fan call may cause some air noise in large systems. If any single zone is unable to handle the remaining 25%, the minimum air adjustment in the closed zones must be set to accommodate the excess air. Single zone calls for equipment (fan, heating or cooling), may cause air noise and/or temperature overshoot in large systems. This is the result of excess air being discharged through the zone diffuser. When this occurs it is recommended that the user select a similar call from an additional zone in order to alleviate the amount of air going to the single zone call.

Note: This situation can occur when the SZP Control module is in the auto fan mode or when a single heating or cooling call occurs from Must-Service zones.

Bypass activities are fully controlled by the SZEM module which monitors the system static pressure and modulates a motorized bypass damper accordingly. The static pressure value is communicated to the SZP control module.

HIGH AND LOW TEMPERATURE LIMITS

When bypassing conditioned air it is important to consider high and low limit control to prevent coil freeze up or overheating. The SZEM module monitors the conditioned air temperature and signals the SZP control module when the high and low limits are exceeded. System air temperature value is communicated to the SZP control module.

OUTDOOR TEMPERATURE MEASUREMENTS

In heat pump applications, the outdoor temperature may be used to determine when to lock out either the compressor(s) or auxiliary heat (high and low balance points). Outdoor air temperature is communicated to the SZP control module. Outdoor temperature value may be displayed at both the SZP control module and zone thermostats. Refer to the information provided with the SZEM module for detailed installation instructions.

5. SYSTEM OPTIONS AND OPERATION

5.1 INTERACTION BETWEEN MODULES

The SZP control module is the central processing unit in the SlimZone Premier system and is in constant communication with the DSL-520P zone thermostats and the optional SlimZone Environmental module (SZEM). The following describes the interaction between the modules.

5.1.1 SZP CONTROL MODULE

The control module has global control of the system and establishes parameters such as program temperature setpoints, schedules, and mode of operation.

EQUIPMENT CONTROL
The control module has full control of the HVAC equipment. It processes the zone requests for heating, cooling, and fan and monitors the conditions reported by the SZEM module and services the zones accordingly.

TESTING
All relay output terminals may be tested from the SZP control module via the Equipment Test menu. All zone dampers may be activated as well as all zone perimeter heat relays. Bypass dampers may also be tested from the control module.

PROGRAMMING
All system programming is done at the SZP control module. The module establishes the temperature setpoints and the events the zone thermostats control. Temporary local override is made possible by changing the setpoints at the zone thermostats. Refer to section 5.2 for further programming information.

MODE OF OPERATION (Off, Cool, Heat, Auto, E Heat)
The control module establishes the global (system) mode of operation; local mode of operation may be selected at the zone thermostats. Only calls for the modes established by the control module will be serviced.

CONSTANT FAN
Global fan control is established at the control module. When set to constant fan (fan on) and the system is idle, all zone dampers are opened to circulate air to all zones. When the global fan control is set to auto, local requests for constant fan are serviced; dampers to zones not calling for constant fan are closed. The G1 terminal is used for constant fan. Refer to section 5.4 for Smart Fan feature.

MINIMUM EQUIPMENT ON AND OFF TIMES (Short Cycle Protection)
Minimum equipment ON and OFF times are set at the control module for both heating and cooling. Zone thermostats also have minimum ON time settings (2 or 4 minutes). The control module ensures the equipment is not shut off until the thermostat and the module minimum ON times have elapsed; timers run concurrently. Minimum OFF time is established by the control module.

DATA EXCHANGE: SZP CONTROL MODULE / DSL-520P ZONE THERMOSTAT
The SZP control module provides the following information to the DSL-520P thermostats:

- temperature setpoints
- event (morning, day, evening, or night)
- time of day
- outdoor temperature (if SZEM module is installed with this option)

The DSL-520P thermostat provides the following information to the SZP control module:

- heating, cooling, and fan requirements
- room temperature
- temperature setpoints (if temporary local override is requested)

DATA EXCHANGE: SZP CONTROL MODULE / SZEM MODULE

The SZP control module provides the following information to the SZEM module:

- high and low temperature limits

The SZEM module provides the following information to the SZP control module:

- outdoor temperature
- duct temperature and pressure
- status of high and low limits

5.1.2 DSL-520P ZONE THERMOSTAT

The DSL-520P zone thermostat provides local control of the following parameters:

MODE OF OPERATION

Local mode settings are requests only; calls for these modes are serviced only if the control module is in that mode as well.

PERIMETER HEAT

When the SZP control module is unable to service a zone requesting heating because it is currently servicing cooling or in a minimum OFF time, the thermostat will close its relay contact on terminals R and W1 which may be used to energize a local perimeter heat device. When the module is finally able to provide heating, perimeter heat will be disabled.

NOTE:

- Perimeter heat is allowed only when the control module is in the heat or auto mode.
- The perimeter heat relay is a 24VAC dry contact output (rated at 0.75Amps).

CONSTANT FAN

When global constant fan is selected, all zones are in the constant fan mode regardless of the local fan setting. The fan (✤≈) symbol appears on the thermostat display when local constant fan is selected; it does not appear when global constant fan is selected.

TEMPORARY TEMPERATURE OVERRIDE

During the occupied period, individual zone temperature setpoints may be changed and remain valid for the duration of the occupied period. The temporary setpoints are discarded when the thermostat changes over to the unoccupied period (minimum one (1) hour).
During the unoccupied period, individual zone temperature setpoints may be changed and remain valid for a period of one (1) hour, after which the temporary setpoints are discarded.

UNOCCUPIED MODE: SYSTEM & LOCAL

System:
Unoccupied Mode: Unoccupied mode occurs when **all** zone thermostats are in night mode.
Local:
Unoccupied Mode: Unoccupied mode occurs when a zone thermostat goes into night mode. The minimum temporary override is (1) one hour and will remain in effect until the (1) one hour period has elapsed. Moving into an unoccupied period (night mode) during this minimum temporary override will not affect its status.
During the unoccupied period, zones 1 to 13 act as Must-Service zones when the zone thermostat ▼ or ▲ buttons (system override) are depressed. Zones 14 to 19 do not act as Must-Service zones at this time.

MINIMUM EQUIPMENT ON TIME (short cycle protection)
The minimum amount of time the thermostat will call for heating or cooling may be set to either 2 or 4 minutes via switch #1 on the back of the thermostat. This timer is initiated the moment the request is made, regardless if the control module services the demand immediately. When equipment is activated, it will not shut off until both the thermostat's and the SZP control module's minimum ON times have elapsed; timers run concurrently.
The thermostat has no minimum OFF time setting.

CLOCK DISPLAY FORMAT
Time may be displayed in either 12 or 24 hour format. Press and hold the FAN button, then press the OUTDOOR button to change the format.

TEMPERATURE DISPLAY FORMAT
The temperature may be displayed in either °C or °F format. Press the ▼ and ▲ buttons simultaneously to change the format.

5.1.3 SZEM ENVIRONMENTAL MODULE
The SZEM module monitors the system ductwork pressure and controls a motorized bypass damper accordingly. The module also monitors the ductwork air temperature and signals the SZP control module when the high and low limits have been exceeded. The SZEM module can also be installed with an outdoor temperature probe. The outdoor temperature is communicated to the SZP module.

5.2 SYSTEM PROGRAMMING
All system programming is done at the SZP control module.

5.2.1 PROGRAMMING FEATURES
The SlimZone Premier system offers the following programming features:

- 7 day programmable
- 2 or 4 events per day (morning, day, evening, night)
- individual zone schedules
  - zones 1 - 12 may have unique schedules
  - zones 13 - 19 use the same schedule
- copy a day schedule to consecutive days or to all days of the week
- copy a zone program to other zones

5.2.2 SCHEDULES
The SZP control module can execute the schedules as follows:

NORMAL:
The control module executes the programmed schedules normally.

SUSPENDED: PERMANENTLY
When this mode is selected, the programmed schedules are disregarded and the user must enter override temperature setpoints to which all zone thermostats will be controlling. Local override is still allowed but for a duration of one (1) hour (unoccupied mode). The system will remain in the PERMANENTLY SUSPENDED mode until the user changes it.

SUSPENDED: TEMPORARILY (UNTIL)
When this mode is selected, the programmed schedules are disregarded and the user must enter override temperature setpoints to which all zone thermostats will be controlling. The time and date when the system is to return to the NORMAL mode also must be entered. Local

override is still allowed but for a duration of one (1) hour (unoccupied mode). The system will remain in the TEMPORARILY SUSPENDED mode until the programmed time and date is reached.

5.2.3 FACTORY DEFAULTS

The SZP control module is shipped with the following program settings:

- All temperature setpoints set at: ...Heat: 68°F(20°C) Cool: 73°F(23°C)
- All schedule times set at: 12:00A

5.3 USER OPTIONS

The SZP control module allows the user to set the time of day display in 12 or 24 hour format. The user also may set the temperature display in Celsius or Fahrenheit. These settings do not affect the thermostat displays.

5.4 HVAC OPTIONS

The SZP control module allows the installer to establish the following system parameters:

HEAT/COOL OR HEAT PUMP SYSTEM

The SZP module can control up to four (4) stages of heating and three (3) stages of cooling in the heat/cool mode and three (3) stages of heating and three (3) stages of cooling in the heat pump mode.

In the heat pump setup, W3 terminal is used for the auxiliary heat, even when a single compressor is used. The emergency heat mode becomes available as one of the modes of operation. When emergency heat is selected, W3 terminal will cycle on demands for heating and W4 terminal will be on continuously.

NUMBER OF STAGES OF HEATING AND COOLING AND NUMBER OF ZONES REQUIRED TO ACTIVATE EACH STAGE

Upstaging and downstaging is based strictly on the number of zones calling. Downstaging will also occur when the high and low limits are exceeded.

MINIMUM HEATING AND COOLING ON AND OFF TIMES

The system allows input of different minimum ON and OFF times for heating and cooling.

CONTROL METHOD: TIMESHARE OR DIFFERENTIAL

The SZP control module has two methods of determining which equipment calls to service first (heating or cooling) and when to changeover to the opposite equipment. The two control methods, timesharing and differential, are described in section 5.5.

THE MUST-SERVICE ZONE

The Must-Service zone uses an intelligent weighting protocol which gives a status to the zone such that a call from this zone equals the number of zones required to activate the first stage of that mode. For example, if three (3) zones are required to call for activating first stage heating, a call from the Must-Service zone will be given a weight of three (3) to simulate three (3) zones calling. From this point, the control module will process this call and determine if the zone is to be serviced based on the timesharing or differential control methods. The Must-Service zone is not given any other special status.

HIGH AND LOW TEMPERATURE LIMITS

The limits are entered at the SZP control module and stored in the SZEM module memory.

HIGH AND LOW BALANCE POINTS

These values are used to determine when the auxiliary heat terminal should be disabled (high balance point) and when the compressor terminal should be disabled (low balance point).

SMART FAN ENABLE
When Smart Fan is enabled and constant fan is selected at the control module (global constant fan), the fan will remain ON during the occupied period and go to the auto mode during the unoccupied period. Note that all zones have to be in the unoccupied (night) period for the fan to go in the auto mode. If auto fan is selected at the control module, local fan demands are processed normally; fan will be ON to zones requesting constant fan.

5.5 CONTROL METHODS

5.5.1 TIMESHARE

The timeshare control method will change over from heating to cooling and vice versa as follows:

A. No equipment calls are serviced until the number of zones calling for either heating or cooling meet the requirements for the number of zones needed to activate first stage. The first mode to satisfy the requirements will be serviced.

B. Upon initiating the equipment call, the control module starts a 20 minute internal timer. Calls for the opposite equipment mode are ignored during these 20 minutes.

C. If the current call is not satisfied after the first 20 minutes and calls for the opposite mode have met the requirements to activate the first stage of equipment, the control module will changeover to the opposite mode and reinitiate the 20 minute timer.
NOTE:
- In heat/cool mode, the control module will changeover to the opposite equipment mode after the minimum OFF time of the equipment it just serviced.
- In heat pump mode, changeover is done by activating the opposite reversing valve output (O/B terminals); the compressor is not turned OFF.

D. The control module will continue in this fashion, changing over every 20 minutes, until the zones are satisfied. Note that the control module will service an equipment call only if the number of zones calling meet the requirements to activate that stage. The moment the number of zones calling is not sufficient to activate that stage, the module will consider this call to be satisfied.

UPSTAGING AND DOWNSTAGING
When the control module changes over to the opposite equipment mode and sufficient number of zones are calling for second stage, the module will start with the first stage. If after 5 minutes the number of zones calling is still sufficient, the module will activate the second stage. Subsequent stages are activated, one every 5 minutes, providing the number of zones calling is sufficient. In the heat pump mode, the auxiliary heat is delayed a further 15 minutes after the last compressor stage.

Downstaging occurs in a similar manner when the number of zones calling decreases to a value below the number of zones required to activate that stage.

5.5.2 DIFFERENTIAL

In the differential control method, the control module determines the difference between the number of zones calling for heating versus the number of zones calling for cooling. The difference calculated is then compared to the number of zones required to activate the first stage of equipment for the mode which has more calls, and if sufficient, that stage will be activated and zones calling for that mode will be serviced.

UPSTAGING AND DOWNSTAGING
If the calculated difference between zone calls is sufficient to activate the second stage of equipment for the mode currently activated, then the module will upstage. Downstaging occurs when the number of zones calling decreases and the calculated difference falls to a value below the number of zones required to activate that stage.

5.6 SEQUENCE OF OPERATION

5.6.1 TIMESHARE MODE

Note: The following assumes the control module is in the auto mode of operation.

A. Control module receives zone requests for heating and cooling. First mode to satisfy the number of zones requirement for first stage is serviced.

B. Equipment is activated:
- W1 is energized for heating and Y1 is energized for cooling (in both heat/cool and heat pump mode).
- B terminal is energized for heating and O terminal is energized for cooling.
- Both G1 & G2 fan terminals are energized.
- Dampers to zones calling for that mode are open.
- 20 minute timer is initiated.

C. Equipment stays ON for at least minimum ON time.

D. In the heat pump mode, if the 20 minute timer runs out and the opposite mode is being requested, the control module will changeover to the opposite mode (timesharing) by toggling the reversing valve output terminals (O and B). The compressor is not turned OFF.

E. When the equipment call is satisfied (in both heat/cool and heat pump mode), or when the 20 minute timer has elapsed and the opposite mode is being requested (in heat/cool mode), the equipment is turned OFF and a 45 second purge cycle begins:
- W1 or Y1 is deenergized.
- G2 is deenergized; G1 remains energized.
- B or O terminal remains energized.
- Zone dampers remain open.

F. After the 45 second fan purge, the equipment will remain OFF for at least the duration of the minimum OFF time for the equipment which was just serviced. The control module will remain in one of the following conditions during this period:
- If global constant fan selected, all zone dampers open and G1 remains ON to circulate air.
- If only local constant fan is requested, dampers to zones requesting constant fan open and all other dampers close. G1 remains ON.
- If constant fan not requested and no other equipment calls are present, G1 is deenergized and dampers to last zones calling remain open.
- If constant fan is not requested and calls for the opposite mode of equipment are received by the module, G1 is deenergized and dampers to the zones calling for the opposite mode are open and all other dampers are closed.

G. After the minimum OFF time, the control module will service the opposite mode of equipment if calls for it are pending; steps **A** to **E** are repeated. If there are no pending calls for the opposite mode, the control module is ready to service any calls.

NOTES:
- When changing over to the opposite mode of equipment, the control module will start with the first stage of equipment even if enough zones are calling to activate additional stages. The module will upstage every five (5) minutes afterwards; auxiliary heat stage in the heat pump mode will energize fifteen (15) minutes after the last compressor stage.

- If the control module receives a high limit (in heating) or low limit (in cooling) alarm from the SZEM module, it will downstage the equipment, one stage immediately then one stage every five (5) minutes, until either the alarm condition is resolved or until equipment is shut off. The control module will not reactivate the equipment until the alarm conditions are corrected.
- If the smoke detector terminals close, the control module will immediately shut OFF the equipment and energize the close damper terminals.

5.6.2 DIFFERENTIAL MODE

A. In the differential mode, equipment stages are activated based strictly on the number of zones calling.

B. Activating equipment and turning it OFF is same as in the timeshare mode.

5.7 USER INTERFACE

The SZP control module incorporates a four (4) button keypad and four (4) lines by twenty (20) characters Liquid Crystal Display (LCD) providing the most advanced and user friendly interface in the industry. All system information and commands are entered and may be viewed via this interface.

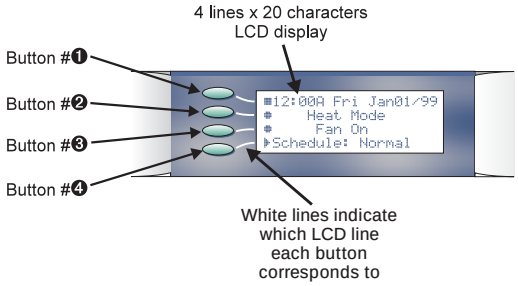


Figure 5.1: User Interface

The control module incorporates Light Emitting Diodes (LEDs) to indicate the status of certain parameters such as the following:

- Damper open (labeled D - green)
- Fault in wiring (labeled F - red)
- Zone thermostat calls for heating (labeled W - orange)
- Zone thermostat calls for cooling (labeled Y - yellow)
- Zone thermostat calls for fan (labeled G - green)
- Heating equipment output terminals energized (labeled W1 - W4 and B - orange)
- Cooling equipment output terminals energized (labeled Y1-Y3 and O - yellow)
- Fan output terminals energized (labeled G1 & G2 - green)
- Proper communication between thermostats and SZP module (labeled Normal When Flashing - green)
- Proper communication between SZEX expander modules and SZP module (labeled Module Connected - green)

5.7.1 LCD SYMBOL DESCRIPTION

■ Leads to other menus; further data to be entered; further options available

● Toggles between menu selections or options

► Forward to next menu

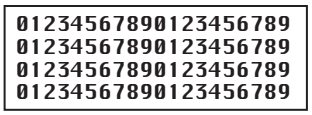
◄ Backs up to previous screen or data entry completed for menu path currently in use

▲ Increase value of an item

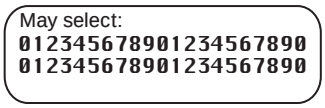
▼ Decrease value of an item

5.8 FLOW DIAGRAM

LEGEND

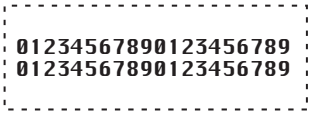


..... Screen



..... Lists options selected by pressing the indicated button #

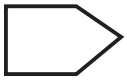
..... Actions which occur behind the scene



..... Momentary screen

..... Direct path to next screen

..... Path to available options to be displayed



..... Off-page connector

..... Return from off-page screens

..... On-page connector

❶ ..... Button number

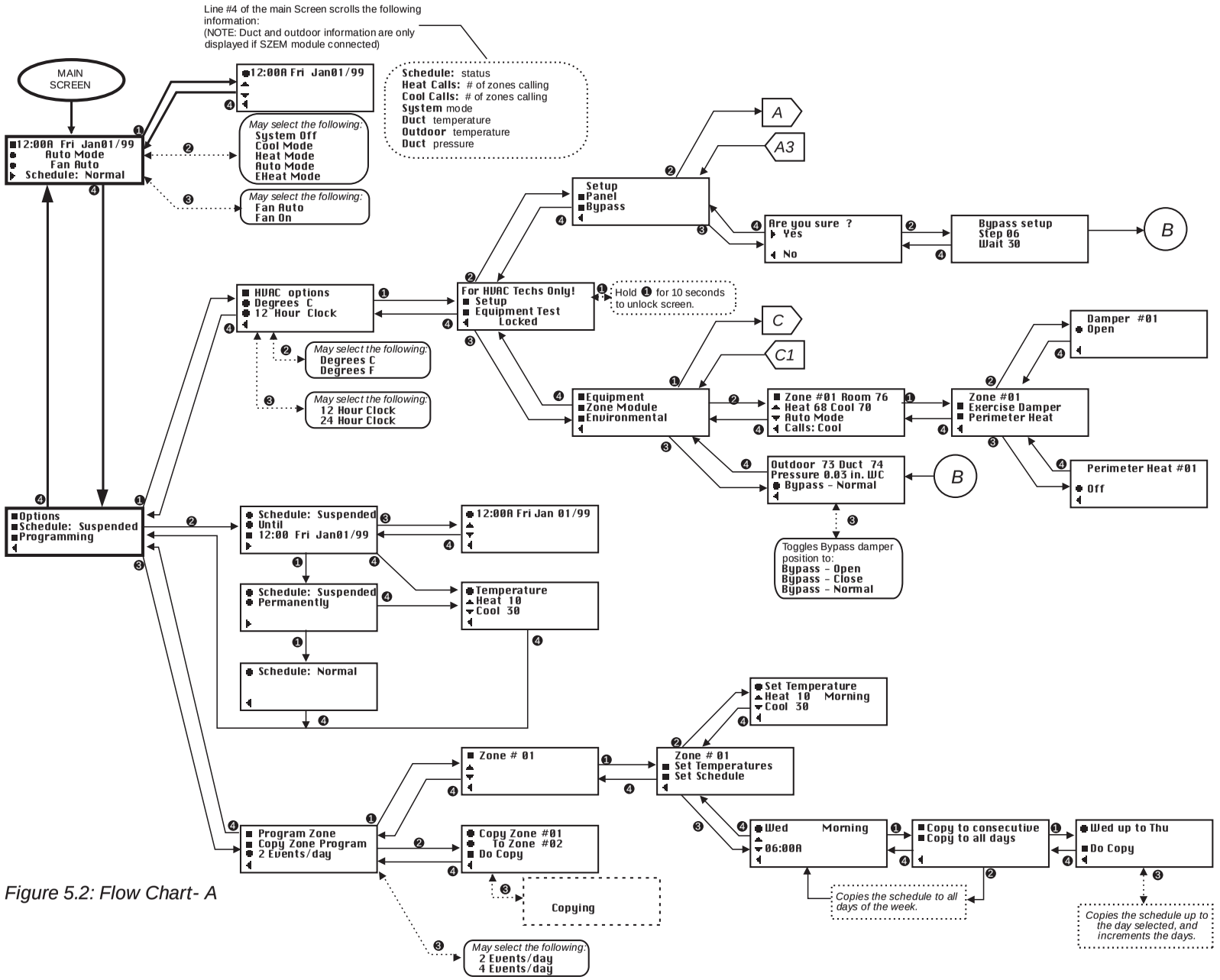


Figure 5.2: Flow Chart- A

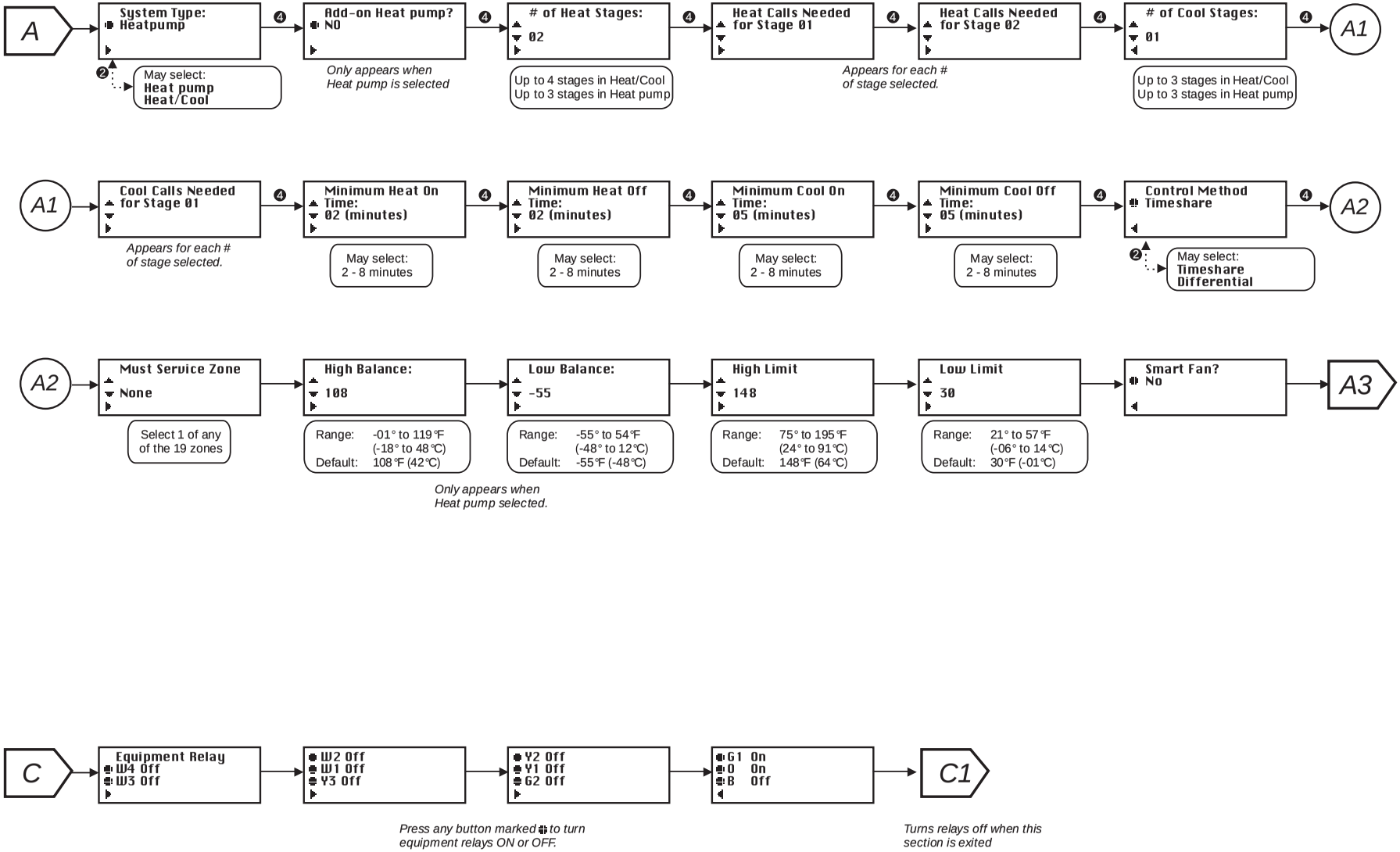


Figure 5.3: Flow Chart- B

6. START UP AND TEST

SETUP

A. Check that the SZEM Environmental module and its components are properly installed.

B. Check all zone thermostats and dampers for proper installation.

C. Ensure polarity has been respected for all zone thermostat wiring and for the SZEM module.

D. Ensure all wires are properly inserted and screwed down in terminal blocks.

E. Tag all wiring and system components to correspond to the zone they serve.

F. If HVAC unit incorporates an economizer, it is important that it be checked for proper operation and that the minimum positioning stop be set.

G. If the HVAC unit has an economizer that is not equipped with a relief damper, it may be necessary to relink the return air damper so that it will always remain thirty percent (30%) open, otherwise the bypass damper system may not perform properly.

START UP

A. Disconnect RC and RH terminals to prevent damage to equipment. Establish panel functionality first.

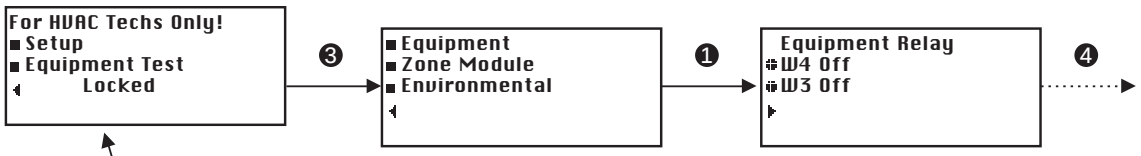
B. Apply 24VAC to system. The system will power up in the following configuration:
- Auto mode
- Fan auto
- Schedule: Suspended
- Heat/Cool system
- 1 Heat / 1 Cool stages

C. Observe the condition of the following LEDs:

- W, Y, & G lights at zone inputs. LEDs to any zone input with a thermostat connected must not be all ON; if they are, panel and thermostat are not communicating. Check wiring for proper polarity. If a thermostat is not connected, these LEDs will be all ON. NOTE: When proper communication is established, the satellite dish symbol (📡) should appear on the thermostat LCDs and the uplink symbol (↗) should flash occasionally.
- On the SZEX Expander modules, the NORMAL WHEN FLASHING is flashing and the MODULE CONNECTED is ON.
- Equipment outputs are not conflicting (i.e., W and Y LEDs not ON at same time).

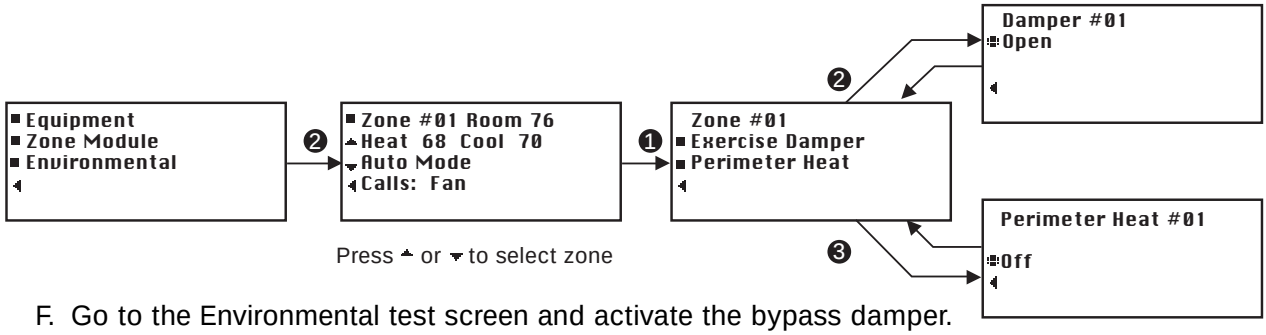
  NOTE: On initial power up, the control module will not respond to equipment calls for a period of 4 minutes. Constant fan requests are serviced.

D. Go to the Equipment Test screen (***Figure 5.2***). Following the menus, turn each equipment output relay ON and OFF to check that on-board relays are functional.



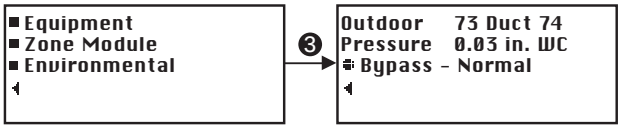
Note: Must hold button ❶ for 10 seconds to unlock these menu options.

E. Go to the Zone Module test screen. Activate all zone dampers and perimeter heat relays (if perimeter heat option installed).



Press ▲ or ▼ to select zone

F. Go to the Environmental test screen and activate the bypass damper.



Press button ❸ to toggle damper position

NOTE: Leave the bypass damper closed at this stage.

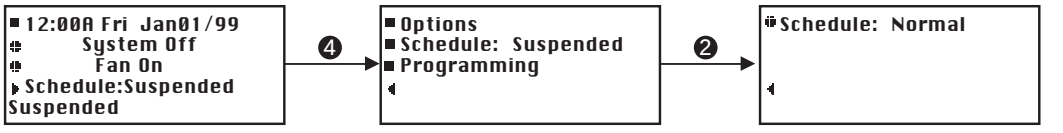
G. Go to the Panel Setup screen and configure the control module according to your installation.

*Refer to **Figure 5.3***

NOTE: During the panel setup, you must select a Must-Service zone. An equipment call from this zone is given enough weight to activate first stage. You may want to select a zone at close proximity to the panel during the system test to facilitate the equipment cycle test.

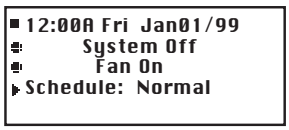
H. Connect RH & RC terminals to power the equipment relays.

I. Go to the Schedule menu and select Schedule: Normal.



Press ❶ until **Normal** is selected

J. Go to the Main Menu:



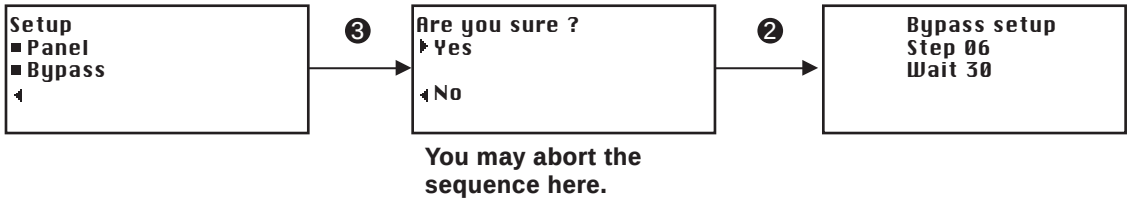
Select the following:
- System Off mode
- Fan On to enable constant fan

K. Observe that all zone damper LEDs come ON and that all zone dampers are open.

L. Heating cycle:
- Place the system in the heat mode.
- Bring the heating setpoint of the Must-Service zone to its highest setting.
- Observe that the W LED at the zone input on the control module comes ON.
- Observe that the following equipment terminals are activated and that LEDs come ON:
  - W1 (first stage heat)
  - B (continuously energized in heating)
  - G1 and G2 (fan relays)
  - Zone damper LED of the zone calling comes ON, all others turn OFF
- Activate additional heat stages, if preferred, by making sufficient additional thermostats call for heating.
- Return thermostat(s) to their original setpoints. Heating equipment will turn OFF after the minimum ON time. Observe the following:
  - W1 (and any additional stages) LED turns OFF
  - G2 LED turns OFF
  - G1 LED and zone damper(s) remain ON for the 45 second fan purge
  - After the 45 second fan purge, G1 LED remains ON and all zone dampers open

M. Cooling cycle:
- Place the system in the cool mode.
- Bring the cooling setpoint of the Must-Service zone to its lowest setting.
- Observe that the Y LED at the zone input on the control module comes ON.
- Observe that the following equipment terminals are activated and that LEDs come ON:
  - Y1 (first stage heat)
  - O (continuously ON in cooling)
  - G1 and G2 (fan relays)
  - Zone damper LED of the zone calling comes ON, all others turn OFF
- Activate additional cool stages, if preferred, by making sufficient additional thermostats call for cooling.
- Return thermostat(s) to their original setpoints. Cooling equipment will turn OFF after the minimum ON time. Observe the following:
  - Y1 (and any additional stages) LED turns OFF
  - G2 LED turns OFF
  - G1 LED and zone damper(s) remain ON for the 45 second fan purge
  - After the 45 second fan purge, G1 LED remains ON and all zone dampers open

N. Go to the Bypass Setup screen and initiate the setup sequence. Note that this process may take up to approximately 5 minutes and you cannot abort this sequence.



You may abort the sequence here.

O. Go to the Programming menu and program all temperature setpoints and schedules for each zone. Refer to section 5.2 for programming features.

P. Return to the Main Menu. System is ready to operate. Place the system mode of operation, fan control, and schedule to the desired settings.

TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE	SOLUTION
No heat/cooling in house	Zone thermostat(s)	Select heat, cool or auto mode of operation at thermostat
	Faulty heating /cooling equipment	Troubleshoot equipment according to manufacturer's instructions.
	Faulty thermostat	Refer to instructions provided with the thermostat for verifying operations. Replace if necessary.
	Faulty zone control panel	Follow instructions outlined in Setup and Test. Replace if necessary.
No heat/cooling in zone	Balancing damper closed	Check all balancing dampers in the same duct as the motorized zone damper; closed balancing dampers should be readjusted.
	Zone registers closed	Check all zone registers; closed registers should be readjusted.
	Faulty thermostat	Refer to instructions provided with the thermostat for verifying operations. Replace if necessary.

GLOSSARY

Auxiliary/Emergency Heat	Applicable to heat pump systems only. Auxiliary heat refers to the 3rd heat stage (W3). In the event of a heat pump compressor failure Emergency Heat (EH) is activated via the user interface on the control module which disables the compressor stages and cycles W3 on all heat calls; W4 is continuously ON in this mode. Refer to section 5.6 for sequence of operation.
Bypass System	A Bypass System maintains a uniform amount of airflow in the branch ducts by opening and closing a damper blade in the main supply duct.
Event	Up to four (4) events per day: morning, day, evening, and night. Each event includes temperature setpoint values for heating and cooling and the schedule at which time each event begins.
Fuzzy Logic	The method by which the thermostat determines the load within its zone before communicating the zone requirements to the SZP module.
Modes	A mode is a specific operating setting (Off, Cool, Heat, Auto, E Heat) which can be established at the control module and the zone thermostats.
Polarity	Correct polarity must be maintained between the communicating zone thermostats and the SZP module to ensure accurate communication and avoid damage. Polarity must be 1-1.
Program	Programming is done at the SZP module and establishes the temperature setpoints and events that the zone thermostats control.
Schedule	A Schedule refers to the programmed times for which events are to occur during a 24 hour period.
SL-IDS	Slimline Indoor Remote Sensors
Stages	The way increments of heating or cooling are controlled. The SZP module allows for four (4) stages of heating and three (3) stages of cooling with a heat/cool system and three (3) stages of heating and three (3) stages of cooling with a heat pump system.
SZEM	Slimzone Environmental Module
SZEX	Slimzone Expander Module
SZP	Slimzone Premier Control Module
Zone	A defined area that is controlled by a DSL-520P zone thermostat and motorized zone damper. Zone thermostats request heating or cooling from the SZP Control module, which in turn controls the HVAC equipment and zone dampers accordingly.

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Zone Schedule

Zone 1	Temperature Settings		Event Start Times						
			Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Morn		Heat Cool							
Day		Heat Cool							
Evening		Heat Cool							
Night		Heat Cool							

Zone 2	Temperature Settings		Event Start Times						
			Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Morn		Heat Cool							
Day		Heat Cool							
Evening		Heat Cool							
Night		Heat Cool							

Zone 3	Temperature Settings		Event Start Times						
			Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Morn		Heat Cool							
Day		Heat Cool							
Evening		Heat Cool							
Night		Heat Cool							

Zone 4	Temperature Settings		Event Start Times						
			Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Morn		Heat Cool							
Day		Heat Cool							
Evening		Heat Cool							
Night		Heat Cool							

Zone 5	Temperature Settings		Event Start Times						
			Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Morn		Heat Cool							
Day		Heat Cool							
Evening		Heat Cool							
Night		Heat Cool							

Zone 6	Temperature Settings		Event Start Times						
			Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Morn		Heat Cool							
Day		Heat Cool							
Evening		Heat Cool							
Night		Heat Cool							

Zone 7	Temperature Settings		Event Start Times						
			Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Morn		Heat Cool							
Day		Heat Cool							
Evening		Heat Cool							
Night		Heat Cool							

Zone 8	Temperature Settings		Event Start Times						
			Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Morn		Heat Cool							
Day		Heat Cool							
Evening		Heat Cool							
Night		Heat Cool							

Zone 9	Temperature Settings		Event Start Times						
			Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Morn		Heat Cool							
Day		Heat Cool							
Evening		Heat Cool							
Night		Heat Cool							

Zone 10	Temperature Settings		Event Start Times						
			Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Morn		Heat Cool							
Day		Heat Cool							
Evening		Heat Cool							
Night		Heat Cool							

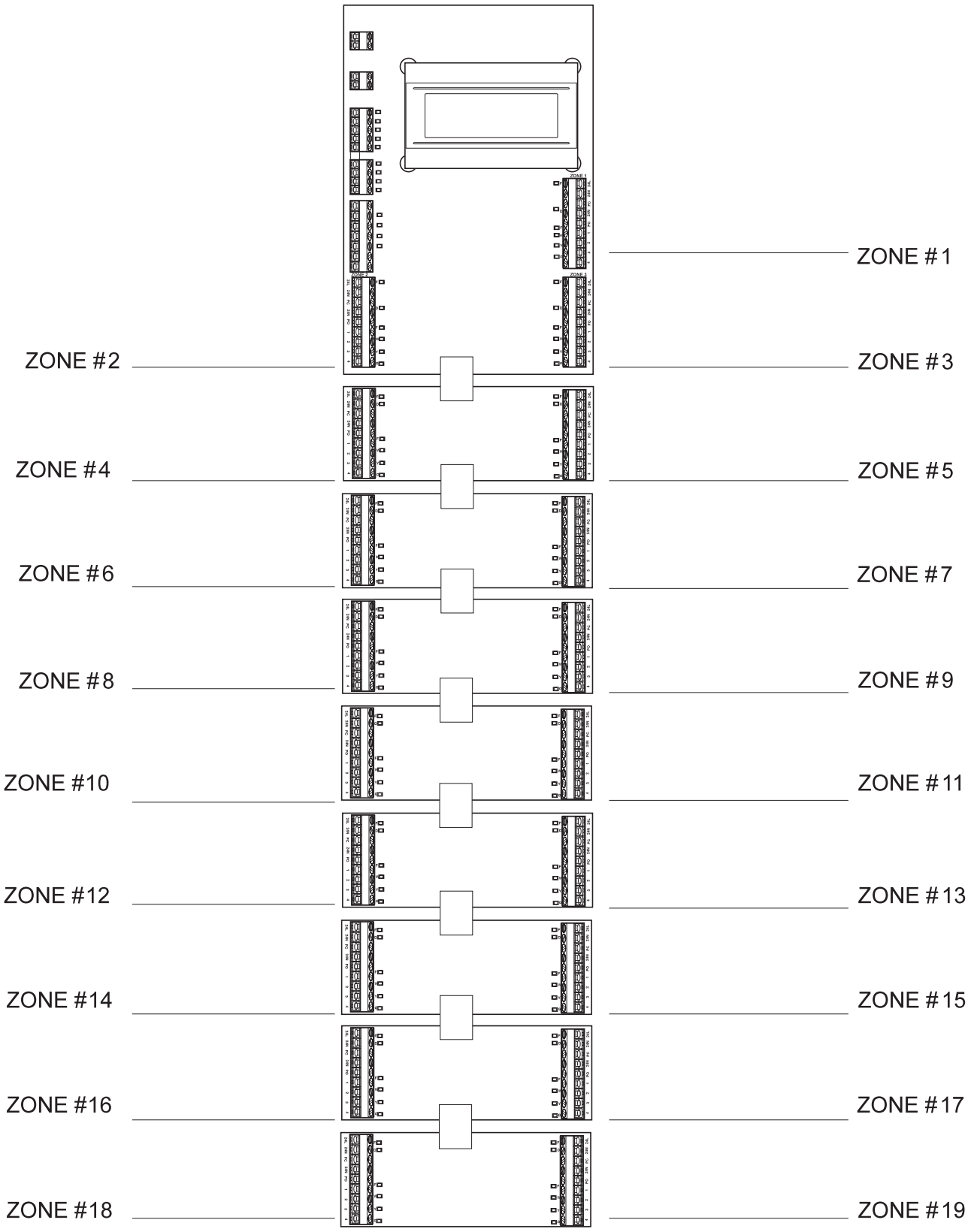
Zone 11	Temperature Settings		Event Start Times						
			Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Morn		Heat Cool							
Day		Heat Cool							
Evening		Heat Cool							
Night		Heat Cool							

Zone 12	Temperature Settings		Event Start Times						
			Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Morn		Heat Cool							
Day		Heat Cool							
Evening		Heat Cool							
Night		Heat Cool							

Zone 13 to 19	Temperature Settings		Event Start Times						
			Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Morn		Heat Cool							
Day		Heat Cool							
Evening		Heat Cool							
Night		Heat Cool							

Note: Zones 13-19 adhere to the same schedule

SLIMZONE PREMIER-SZP-ZONE DIAGRAM



WARRANTY

Limited One Year Warranty
Robertshaw warrants to the original purchaser that its product and component parts will be free from defects in workmanship and materials for a period of one year from the date of purchase. Your dealer will provide free replacement of your thermostat upon proof of purchase.

Exclusions

This warranty does not apply in the event of misuse, abuse or as a result of unauthorized alterations or repairs. The manufacturer will not be liable for any consequential damages including, without limitation, damages resulting from defects, loss of use, or misuse.

Compliance

- This equipment, if installed in strict accordance with the manufacturer's instructions, complies with the limits for a Class B computing device pursuant to Subpart J of Part 15 of FCC rules.
- This equipment, if installed in strict accordance with the manufacturer’s instructions, complies with CE rules.

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